Badlands Past and Present

"I"VE BEEN ABOUT THE WORLD A LOT AND PRETTY much over our own country, but I was totally unprepared for that revelation called the Dakota Bad Lands.... What I saw gave me indescribable sense of mysterious otherwhere."

- Architect Frank Lloyd Wright, 1935

Driving along I-90 through western South Dakota, visitors get their first glimpse of the Badlands Wall breaking through the prairie. The result of wind and water erosion, this feature, standing on the horizon like serrated teeth of some enormous prehistoric predator, has inspired awe in travelers prior to its designation as a park. Evidence of 12,000-year-old human occupation indicates the use of this area as a hunting ground. In more recent times, the Lakota named this place Paha ska, or the White Hills, in contrast to Paha sapa, the Black Hills. Because of a lack of water and difficult terrain, Europeans didn't extensively travel the area until the 1800s. French fur traders began visiting the region in the 1840s and in recognition of the extreme conditions dubbed it *les* mauvaises terres á traverser, or "bad lands to travel across." The scientific explorers and fossil hunters of the second half of the 19th century seconded this description as they worked in the scorching heat and struggled to transport heavy loads of fossils.

However, as the Badlands became more accessible, homesteaders moved to the region and began to realize the harsh beauty of the place. As early as 1909 (only two years after a railroad was built into the region), a group of citizens began to petition for the establishment of a national park. Senator Peter Norbeck of South Dakota and others worked through the 1920s to get a bill passed in Congress. On March 4, 1929, President Calvin Coolidge signed a bill authorizing the establishment of the Badlands as a national monument.



The "white" water of the White River Badlands is loaded with submicroscopic particles of clay in *colloidal dispersion* (the particles carry a slight charge of electricity that causes them to repel each other and prevents them from settling to the bottom).

Too Thick to Drink, Too Thin to Plow

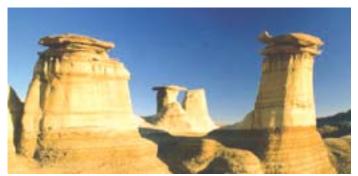
The White River, a major force in creating the Badlands of South Dakota, cuts just a few miles to the south of the park's North Unit. The water's milky appearance gives the river its name and caused homesteaders to call it "too thick to drink, too thin to plow." The water is undrinkable because every time it rains, Badlands sediments stream off the formations into creeks that feed the White River, causing further erosion. In some places harder sandstone layers act like roofs over the softer clays that make up most of the formations. As a result, the Badlands do not erode uniformly but are sculpted into fantastic spires and pinnacles.

Finally, after the completion of a road through the park, Badlands National Monument opened to the public in 1939. In 1978, the national monument became a national park after the addition of 133,000 acres located on the Pine Ridge Indian Reservation. This section of the park, referred to as the Stronghold District or South Unit, is owned by the Oglala Sioux Tribe and managed in cooperation with the National Park Service. Much of this land was used by the United States Air Force as an aerial gunnery range during World War II, and unexploded ordinance still litters the South Unit.

Today, these histories continue in the people who live in and visit the Badlands region: the Lakota people, ranchers descended from early homesteaders, and the paleontologists continuing the tradition of research started by the first fossil hunters. Nearly a million visitors a year experience this human past and present, as well as the park's natural heritage: the towering Badlands formations studded with the remains of ancient creatures and footed by a broad sweep of native prairie.

The Other Badlands

THE Badlands isn't the *only* badlands. Geologists define badlands as a landform located in an arid region and highly sculptured by water and wind. Formally called the White River Badlands, the park's formations are considered one of the best examples of this geologic term. While Badlands National Park is home to the Big Badlands, several other national parks have badlands. *Some* of the other parks where badlands can be seen are Theodore Roosevelt National Park in North Dakota, Death Valley in California, and Petrified Forest National Park in Arizona. Badlands are also found on all the other continents in the world.



Badlands of Alberta, Canada

Research These Resources Websites

Badlands National Park: www.nps.gov/badl State of South Dakota: www.state.sd.us/ Oglala Sioux Tribe: www.lakotamall.com/ oglalasiouxtribe

NPS Explores Geology: www2.nps.gov/geology/parks/badl/

South Dakota School of Mines Museum of Geology: museum.sdsmst.edu/

Books

Hauk, Joy Keve. *Badlands: Its Life and Landscape* O'Harra, Cleophas. *The White River Badlands* Zarki, Joe. *The Story Behind the Scenery: Badlands National Park*

Quick Facts About Badlands National Park

1939: Established as a National Monument

1978: Redesignated Badlands National Park

Acreage: 244,000

Wilderness: 64,144 acres

Key Resources:

- •Largest expanse of protected prairie ecosystem in National Park system
- •Considered the world's richest mammal fossil beds
- •50% of Badlands National Park is co-managed with the Oglala Lakota Nation, the second largest American Indian Reservation in the United States
- •Most successful reintroduction site for the black-footed ferret, one of the world's rarest mammals

Visitation:

Approximately 1.0 million visitors each year from all over the world

Key Management Issues:

- •Protection of fossil resources
- Reintroduction of native wildlifeReduction of exotic plant species
- •Co-operation with the Oglala Lakota Nation to manage resources and visitor use in the South Unit of Badlands National
- •Visitor and employee safety
- •Preservation of over 50,000 artifacts and specimens in museum collections
- •Maintenance of park facilities

Key Partner:

Badlands Natural History Association, non-profit education support

What's Inside

The National Park Service2
Managing Badlands National Park3
A Day In the Life4
Prairie: A Vanishing Landscape5
Plans and Partnerships6
Working for the NPS7
Your Role8

The National Park Service

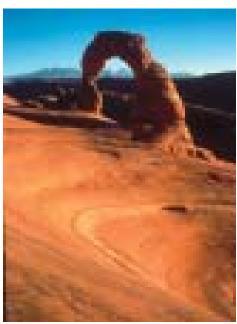
The Best Idea We Ever Had...

NATIONAL PARKS EXISTED BEFORE THERE WAS A NATIONAL PARK SERVICE. The first national park in the United State (and in the entire world) was Yellowstone, established in 1872 as a public park or pleasuring-ground for the benefit and enjoyment of the people. However, the idea of national parks was initially sparked by American artist George Catlin. Catlin wrote in 1832 during a visit to the Dakotas that American Indian civilization, wildlife, and wilderness should be preserved by some greating protecting policy of government . . . in a magnificent park . . . A nation's park, containing man and beast, in all the wild and freshness of their nature's beauty. By 1916, his vision had been at least partially implemented and the nation had designated 14 national parks and 21 national monuments. These parks fell under the authority of the Department of the Interior; however, this arrangement meant the parks and monuments lacked organized administration. In fact, army troops fought fires, caught wildlife poachers, and served as guides at some national parks while other areas received little protection at all. In recognition of this need, Congress formed the National Park Service in 1916 with the mission of protecting the United States' special places for the enjoyment of present and future generations. Stephen Mather, the new agency's first director, worked to balance preservation while making parks accessible to the American people. He oversaw construction of roads, railways, and lodges in national parks.

The National Park Service has greatly expanded from those original 14 national parks. Today, the agency is responsible for 388 areas as diverse as an historic home in downtown Atlanta, Georgia memorializing Dr. Martin Luther King, Junior to over 10 million acres of wilderness in Wrangell-St. Elias National Park in Alaska. National riverways, lakeshores, battlefields, and recreation areas also have park rangers working to educate the public while protecting the past for the future. The role of the park ranger has changed since the early days, as well. Today's members of the park staff include biologists, educators, geologists, maintenance workers, law enforcement specialists, and many, many other specialties. The National Park Service has come a long way since 1916. After nearly 90 years, the migration of millions of vacationing Americans to our national parks proves protecting these wild places is one of the best ideas we've ever had.

When Is a National Park NOT a National Park?

A national park is not a national park when it is a national monument or historic site or seashore or trail or riverway or one of the many other designations. All of these sites are administered by the National Park Service but have very different meanings. Of the 388 units of the National Park Service, only 57 are actually named "National Park." Badlands started out as a national monument. This designation indicated that the monument boundaries protected one specific feature or resource - in our case, the formations of the "Wall." A national park protects diverse resources. Monuments can be declared by the President while the designation of a new national park takes an act of Congress. Badlands became a national park after the addition of 133,000 acres on the Pine Ridge Indian Reservation. Today, the park is recognized for its geology, rich fossil resources, mixed grass prairie ecosystem, and cultural history.





The National Park Service includes remote features like Delicate Arch in Utah and urban icons like the Washington Monument.

Research These Resources:

Websites

National Park Service (NPS): www.nps.gov/
Department of the Interior: www.doi.gov/
History of the NPS: www.cr.nps.gov/history_nps.htm
NPS Public Use Statistics: www2.nps.gov/nature.nps.gov/stats/
Online Books on NPS history: www.cr.nps.gov/history/books-title.htm

Books

Albright, Horace M. Creating the National Park Service Everhart, William C. The National Park Service Hartzog, George. Battling for the National Parks Runte, Alfred. National Park: The American Experience Tilden, Freeman. The National Parks

National Park Service Mission

The Mission of the National Park Service is "to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." This means the beautiful lands of our national parks are to be protected but not untouched. Our parks are here for us to *enjoy*. We love visiting our parks, but the second part of the mission tells us that we can't love them to death. They must remain unharmed for all those who haven't been born yet. Balancing these needs for protection and access is the job of the National Park Service.

Vital Statistics of the National Park Service

- •1872 marked the first national park, Yellowstone
- •In 1916, the National Park Service was established
- •There are currently 388 units of the National Park Service
- •The most visited National Park: Great Smoky Mountains National Park with 9,167,046 visitors in 2004
- •84,393,240 acres protected by the National Park System
- •45 parks include wilderness areas
- •427,706,748 people visited national parks in 2004 (Compare that to the population of the United States 295,734,134!)

Treasured Resources

Park rangers work in Resource Protection, Resource Management, and Resource Education. The word resource gets used a lot in the National Park Service and stands in for all the natural and historic treasures parks are meant to protect: things like native prairie, fossils, forests, the Lincoln Memorial, sea and lakeshores, and Lewis and Clark's winter camp. The resources are the reason people visit national parks - and the reason some people become park rangers.



Where Did You Get That Hat?

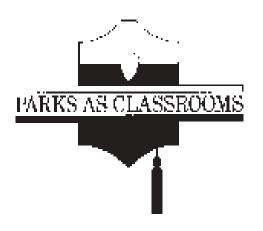
The symbol of the National Park Ranger is certainly the "flat hat" that tells anyone the wearer works for the National Park Service. But - the hat did not originate with the NPS. The hat is modelled after two others: The campaign hat of the U.S. infantry and the hat of the Royal Canadian

Mounted Police. The hat band is a circle of sequoia tree cones. Park rangers actually are required to have TWO hats: a summer hat made of straw and a winter hat made of felt. Think you want to wear one? Consider working in a national park after you are 18 years of age. Visit www.usajobs.opm.gov to learn about jobs with the federal government.

What's Up With This Patch?

All uniformed employees of the National Park Service wear this emblem on the left shoulder of their shirts and jackets, on their ball caps, and on protective gear. The overall shape is an arrowhead, which represents the rich cultural heritage of the United States. The dark green Sequoia tree symbolizes the plants found in the natural realm of national parks. The bison, or buffalo, gives presence to wildlife while the mountain and lake are landscape features found in many national parks. Together these pieces - culture and nature - are the best of a nation and the pride of its people.





Going to School Outside of the Classroom

Watch for this logo on websites, publications, and other materials. It is the symbol to remind you that the National Park Service is dedicated to your education - no matter how old or young you are. The national parks are living laboratories and changing faces. You never knew learning could be so much fun!

Managing Badlands National Park

Follow Your Money!

IN 1997, CONGRESS CHANGED THE RULES ABOUT HOW ENTRANCE FEES collected in national parks were spent. Called the Recreation Fee Demonstration Program, this program now allows parks to keep these fees for facility maintenance and other activities. Before, fees went into the national treasury - like the national bank - and were distributed among all government agencies. Since 1996, user fees have provided \$867 million for improvements in national parks.

Unlike other national parks, Badlands has a unique agreement to honor. Because the South Unit of the park is located on Pine Ridge Indian Reservation, half of the entrance fees collected at Badlands National Park are shared with the Oglala Sioux Tribe. Badlands has contributed to the Tribe through this special arrangement. Additionally, ten percent is returned to NPS headquarters in Washington, D.C. to meet servicewide needs, such as printing park brochures and developing volunteer programs.

Badlands National Park uses the remaining dollars to improve trails, provide critical visitor facilities like sewage disposal, provide school programs, restore habitat, and develop educational media like exhibits and films. These visitor fees allow Badlands to undertake projects that would not otherwise be possible.

Some projects recently completed through use of entrance fee dollars:

- $\bullet \text{Development of a new park film, } \textit{Land of Stone and Light} \\$
- •Installation of wayside exhibits along nature trails
- •Construction of accessible boardwalks at key visitor areas
- •Completion of a new sewage lagoon
- •Restoration of native prairie along the Badlands Loop Road
- •Reintroduction of the black-footed ferret
- •Development of Badlands In Your Classroom, an outreach program that takes rangers into area classrooms



Students at Red Cloud School study Badlands' fossils during Time Travel, a Badlands In Your Classroom Program

Dividing Up the Duties

The first park rangers were members of the U.S. Army. Today, part of that military structure remains with top-down management and a military-like uniform. Each park is headed by a superintendent and its staff falls under divisions determined by the size and complexity of the individual park areas. At Badlands, five divisions work together to manage this national resource: Administration, Resource Protection, Natural Resource Management, Maintenance, and Resource Education. Each division chief has a different area of expertise and oversees a staff of professionals and technicians to ensure protection of park resources and a safe, enjoyable visitor experience.

The law enforcement officers working in Resource Protection are alert to visitor safety and the well-being of the natural landscape. These ranger ensure park regulations are being respected and provide medical assistance when needed. Over the course of the summer, a ranger working in Resource Protection may investigate a report of fossil theft, patrol the park's backcountry on horseback, or assist with a search and rescue operation. These staff members wear the uniform of the National Park Ranger. Fee collection is also typically a task assigned to members of the Resource Protection division.

Those working in Natural Resource Management perform most of the "hard" science research to restore and maintain ecosystems, as well as uncover and study fossils. Paleontologists, biologists, and geologists, as well as experts in fire management, are all found in the Divsion of Natural Resource Management. Currently, their projects include reintroduction of black-footed ferrets and swift foxes, setting and managing controlled burns to improve the health of the prairie, and studying invasive plant species. Paleontologists follow up visitor reports of fossils by mapping and removing them for preparation in labs. Resource management staff may wear a field NPS uniform or specialized gear for their individual duties.

Administration is an unsung hero in any park operation - without personnel, budget, procurement, and information technology management, places like Badlands National Park could not function as a unit of the federal government. Although you may never see an administrative staff member, their work is woven into everything you see and do in a national park.

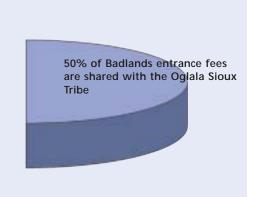
The Maintenance Division deals with the physical upkeep of the park. They construct and maintain trails, repave roads, and maintain buildings, grounds, and utilities. A staff of carpenters, plumbers, mechanics, and laborers renovate housing for park employees and repair facilities as needed. Visitor safety is key to the maintenance staff, who wear a field uniform of work shirts and green jeans.

Where the Dollars Go

40% of Badlands entrance fees are used by the park for facility improvement



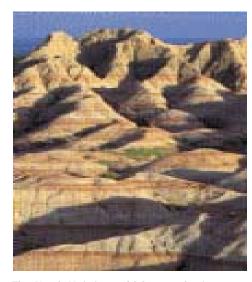
10% of Badlands entrance fees are shared with the entire National Park System

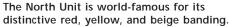


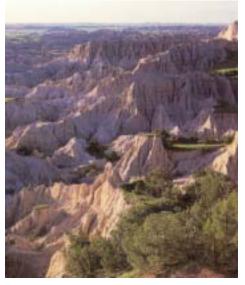
North and South

Badlands National Park is divided into two management units. The North Unit contains the land originally designated in 1939 as a national monument. Located in this unit are the Ben Reifel Visitor Center, park headquarters, Cedar Pass Lodge, two campgrounds, maintained trails, the Badlands Wilderness Area, and the Badlands Scenic Byway. This unit is managed solely by the National Park Service.

The South Unit, or Stronghold District, is located on Pine Ridge Indian Reservation and is owned by the Oglala Sioux Tribe and managed in cooperation with the National Park Service. The addition of this 133,000 acre parcel led to the redesignation of Badlands National Monument to Badlands National Park in 1978. The White River Visitor Center, owned by the NPS but operated by the Oglala Sioux Parks and Recreation Authority, is open each summer. The South Unit boasts some of the most rugged badland formations but is relatively inaccessible due to a lack of designated roads. Private land must be crossed to access much of the Unit, making this a truly wild section of the park.







The South Unit features some of the most expansive badland formations.

Research These Resources:

Websites

NPS Recreation Fee Demonstration Program: www.nps.gov/feedemo/ NPS Employment Information: www.nps.gov/personnel Badlands In Your Classroom Program: www.nps.gov/badl/teacher/ teacher.htm

Books

Foresta, Ronald A. America's National Parks and Their Keepers Rettie, Dwight. Our National Park System: Caring for America's Greatest Natural and Historic Treasures Wirth, Conrad. Parks, Politics, and People

The staff working in Resource Education have many different nicknames - interpreters, naturalists, guides, and teachers. Their official title is Park Ranger or Park Guide and they are the staff you are most likely to meet when visiting any national park. These park rangers staff visitor centers, lead nature hikes, give talks and evening programs, and contact visitors on trails and at overlooks. Exhibits, films, brochures, and other educational media are prepared by these specialists in park-based education. The Division of Resource Education at Badlands National Park includes management of over 50,000 museum specimens, the park research library, slide and photo collections, and coordination with over 20 universities and museums to manage research projects. Resource education rangers also work with area schools to give classroom presentations, field trips, and distance learning, as well as develop student and teacher materials. The park's public affairs, website outreach, and volunteer programs are also managed by the chief of Resource Education.

Although each division in the park has its own responsibilities, they all work toward the same goals. Their missions overlap to create a seamless park experience. All divisions are charged with protecting park resources while providing a safe, enjoyable visit for all. Any member of the park staff should be prepared to answer basic visitor questions about park activities and resources, regardless of their division. Cooperation fulfills the National Park Service mission to protect Badlands for future generations.

A Day In the Life



Park Guide Marlo Mallery works in the Resource Education Division at Badlands National Park. As an undergraduate student of history from New Jersey, Marlo was drawn to the park's rich natural and cultural heritage, as well as its unique landscape. On the front line as a park interpreter, Marlo links the visitors with the park resources, helping them find their own connections to this place. Her responsibilities include researching and giving programs from Fossil Talks to Prairie Walks, working on independent projects, and providing information and orientation to the public in the visitor center.

In her favorite program - the Evening Program - Marlo shares with visitors how the Badlands have inspired generations of artists, writers, and musicians. She used her guitar and singing skills to incorporate music into her program and have the audience sing along. For Marlo, the best part of working for the National Park Service is the chance to "explore America" and those moments when visitors tell her "Now it all makes sense to me." She plans to continue working for the Park Service and hopes to be hired again next summer at another national park under the Student Temporary Employment Program (STEP, see page 7).

Natural Resource Management

We've all seen pictures of fire crews battling fires in parks. As a fire technician, Lloyd Stephens' main job is to stop wildlifes sparked in the Badlands. He may also be called in as part of a crew to help fight fires in other parts of the country. But for Lloyd and the rest of the fire crew, flames aren't always the enemy. As a part of the Division of Natural Resource Management, the fire crew works to restore and maintain the natural ecosystem by actually starting fires. Burning reduces invasive species that may overwhelm the prairie and prevents destructive wildfires from burning out of control by removing thick mats of dry, dead grass. This is the more glamorous side to Lloyd's job. On days when there are no fires, he may be expected to check gear or service the fire

engine, go jogging to maintain his required level of physical fitness, maintain his knowledge of fire incidents around the country, monitor the weather, and complete safety training.

After completing his Bachelor's of Science degree in natural resource management and golf/turf management, Lloyd passed up a permanent job in private industry for a chance to work with fire for the NPS. His position at Badlands gives him a chance to do *hard work that's rewarding*, as well as explore a different part of the country from his home in Wisconsin. He says it's a great profession and he hopes to return for next year's fire season.





Maintenance worker Darrell Richards grew up in the Badlands on Pine Ridge Reservation and has a lifelong connection to his work-place. As an employee in the facility management operation, Darrell works on the Buildings and Utilities crew. This group is responsible for structures like housing, campgrounds, visitor centers, and offices. Individuals with skills in carpentry, plumbing, electrical, and painting are crucial to this work. The B and U crew also performs the janitorial work in and around the buildings and is responsible for the "road run" that insures the entire park is clean and sanitary for all visitors. Darrell may work indoors or out, depending on the need. B and U staff typically works year round and is more likely to have permanent employees.

A second maintenance crew works almost exclusively outdoors the Roads and Trails Crew. Responsible for patching or grading the park roads and parking areas, building or repairing trails, installing outdoor exhibits, and painting and installing signs, the R and T folks are more likely to be part-time or seasonal due to the harsh weather conditions at Badlands and the sharp contrast between heavy summer visitation and very light winter use. Heavy mobile equipment operators must be able to safely remove snow from winding roads, construct boardwalk, gravel, and dirt trails and maintain good physical condition. A pair of park mechanics keeps both crews on the road year round, working on everything from small sedans to dump trucks and snow plows.

Fee Collection

Although a part of the Resource Protection division, fee collection gets its own feature because many NPS employees start their careers "in the booths" at park entrances and campgrounds. Fee collectors are actually the first line of customer service in a park. Amanda Pierce began her career at Badlands National Park as a summer fee collector while she worked toward her degree in business administration. After one summer "in the booth," she was hired under SCEP (see page 7) as a permanent employee in the Division of Administration where she applies her education as the permanent remittance clerk, which means she counts, confirms,

and deposits over \$1.0 million per year in entrance fees. When asked why she was interested in a career with the NPS at Badlands National Park, Amanda said, "Because it seemed exciting, interesting, and I get to work with people. I've found there can be a lot of opportunities for career advancement. Besides, it's a really great place to be." Fee collectors at Badlands are hired from the local communities due to a lack of park housing for seasonal staff; however, many other national parks recruit nationally and provide a place to live in the park. Many parks have permanent career paths in fee collection.





Resource protection rangers like Mark Gorman frequently have dreamed about wearing the flat hat and badge of the NPS since childhood. This is the traditional ranger role visitors think of - although Mark went to college to study interpretation and park management and started at Badlands as an interpretive park ranger (see Resource Education). In fact, resource protection contacts are simply another form of educating visitors about the resources and how to safely visit varied locations of the NPS. Mark is a native of Chicago but longed to leave the city and live in some of the most beautiful landscapes in the world. As Chief of Resource Protection at Badlands, Mark's entire family lives in the park - wife Roberta (a Resource Education ranger!) and their

three children. Resource protection rangers at Badlands spend most of their time in the field - patrolling park roads to ensure visitors are following regulations and safely travelling through. Some law enforcement rangers are specialists in search and rescue while others have expertise in emergency medical services.

The protection rangers and interpretive rangers work together closely and "share" each others duties - to a degree. Protection rangers wear a gun while interpretive rangers do not. Interpreters also assist with search and rescue while protection rangers spend a great deal of their time answering visitor questions about the park and its resources.

A Tale of Two Teachers



Jean Shelby retired from teaching composition and literature in Indiana in 1999 and immediately went back to work - as a National Park Service volunteer. Jean spent two winters in the Badlands, staffing the information desk, managing the park library, and editing publications and materials. She spends her summers now working for concessions in National Parks - so far in Denali National Park in Alaska and Rocky Mountain National Park in Colorado.

I think it's important to stay active and in touch with the whole world - not just retirees. And what better places to be? Barb Mayer is still actively teaching in Honolulu, Hawaii but spends her summers donating time to national parks as an educator. She spent a summer in the Badlands, staffing the Pig Dig and presenting walks, talks, and Junior Ranger Programs. A middle school science teacher, Barb learned about volunteering at Badlands from surfing the 'Net and has continued each summer in a different national park.

People thought it was strange I'd choose to leave Hawaii to go to South Dakota but it was my foot in the door to a second career!



Barb Mayer spent a summer as a volunteer interpreter.

Prairie: A Vanishing Landscape

Get Close, Get Personal with the Prairie

Many people look at the prairie and see something boring and monotonous - the "barren, trackless waste, extending for hundreds of miles" writer Francis Parkman described. Those willing to "get down on [their] hands and knees" as one zoologist suggests, discover complexities of landscape, a busy world working within an ocean of grass. The most obvious feature of the prairie is its endless grass. The Badlands prairie features 56 individual species of grass - with names like buffalograss, needle-and-thread, and side oats grama. These grasses, tougher than any High Plains explorer, take on - among other responsibilities - the roles of food source, habitat, and water reservoir for other prairie life. In summer, a visitor in the prairie can hear the sawing of cicadas and the whirr of grasshoppers. Ground squirrel burrows pock the tangled roots of grass on the sides of sod tables. In the Badlands Wilderness, bison, pronghorn, and mule deer graze the short, nutritious grasses of prairie dog towns. Hawks and turkey vultures make swift shadows across the prairie. Badlands National Park preserves this world in the largest tract of protected mixed grass prairie in the United States. Additionally, the Badlands Wilderness Area is the only prairie wilderness in the country. The original prairie ecosystem in the U.S. is nearly gone - less than 2% remains - replaced by wheat and cornfields, cities, and ranches. Badlands provides visitors with a unique opportunity - get personal with an American survivor, the native prairie.



A bighorn sheep ram is carefully removed after being air-lifted to the Badlands. Bighorn sheep, native to Badlands National Park, were gone from the landscape for almost 40 years until being reintroduced initially in 1964.



Biotechnicians working to reduce invasive plants map Canada thistle in the Badlands Wilderness Area on horseback. No wheeled travel is permitted in the Wilderness Area.

Alien Invaders?

Yes, they are short and green, but they don't have flying saucers. Rather, humans help these aliens travel. Species from other continents are invading the Badlands prairie. Plants such as yellow sweet clover, bromes, and Canada thistle are snatching the space where native grasses and flowers once grew. Many of the invasive species in Badlands National Park were introduced deliberately or accidentally by humans years ago. Grasses such as smooth brome were planted in the park to stabilize the roadsides. Other grasses and sweet clover were introduced as forage for cattle and subsequently spread throughout the West. Non-native species continue to hitch rides to the United States in shipment of feed, the ballast of ships, and even on people! These introductions might not seem like a big deal, but natural ecosystems are as finely tuned as the human body. Imagine if someone added a few extra big toes to your feet. They might trip you up. Similarly, plants and animals have trouble adapting when new species are added to their environment. Food sources may disappear as invasives take over a habitat - or there may be a new aggressive predator to cause worry. This silent and often unnoticed threat has brought about a big battle in Badlands National Park. Biologists and fire crews work to control and eliminate these aliens in order to maintain and restore the native prairie. Fire is part of the natural prairie ecosystem, restoring nutrients and opening space for growth. You can fight the invasion at home. Watch out for alien invaders by using native plants when landscaping and by volunteering to help contain non-native species at your local natural area.

Lost and Found

For years, much of Badlands' wildlife was lost. It didn't take a wrong turn and end up in North Dakota. Rather, it was lost due to human interference: hunting, loss of habitat, and the simple fact that people and critters just have a hard time co-existing. Some of the animals that disappeared from the Badlands include big and little predators like the grizzly bear, wolf, swift fox, and black-footed ferret and grazers such as the elk, bighorn sheep, and bison. Some animals, like grizzlies and wolves, may never be found here again because they require large areas to range and the difficulties of balancing the natural instincts of these wild animals with the surrounding docile cattle. With human help, some Badlands natives have come home. Bison were reintroduced in 1963 and the bighorn sheep in 1964. Black-footed ferrets came back in 1994 and the swift fox in 2003. The animals are closely monitored by park staff and all are doing well. The black-footed ferret is a particular success story. This slinky animal, built to track and kill prairie dogs, were thought to be extinct. Because the numbers of prairie dogs had been sharply reduced, black-footed ferrets declined until there were only 18 left in the world. These animals were placed in a captive breeding program and now dozens have been released into the wild. Badlands has a lot of healthy prairie dogs - a necessity for black-footed ferret survival. Today, the park's ferret population exceeds

The reintroduction of wildlife creates a healthier prairie ecosystem. Some of these animals depend on prairie plants for food, but many prairie plants are also helped by animals. The bison churn and aerate the soil, opening space for new growth and allowing the wildflowers and other non-grass species an opportunity to thrive, creating a more diverse mosaic of plants. Animals can also spread seeds in their thick coats. Putting wildlife back into the ecosystem makes the prairie more vibrant. It also allows human visitors to reconnect to a natural landscape. When animals allow us a glimpse into their lives, we are delighted and hopefully inspired to continue to protect these creatures and the lands that sustain them.





Most of us focus on the fieldwork aspect of paleontology. Did you know that for every hour a scientist spends in the field collecting fossils, TEN hours are spent in a lab getting the specimens ready for study or display? Consider fossil preparation or museum collections management if you enjoy details and digits!

Fossil Hunters

Scientists in the Badlands are not solely interested in modern animals. The ancient mammals of the region are as famous as its bison and bighorn sheep. The first fossil from the Badlands was described in 1846 and sparked the birth of American vertebrate paleontology. Paleontologists have found the ancestors of several modern animals: horses the size of collie dogs (mesohippus), speedy hornless rhinoceroses called subhyracodon, and tiny camels. These remains teach us about the ways animals have adapted as the environment changed. They are like pieces of a jigsaw puzzle, but paleontologists don't get the advantage of a picture on the front of the box. For instance, if you knew that one layer of the Badlands strata is full of aquatic creatures, what could you deduce about the area at that time?

We have puzzled out that at various times in the past, this region was submerged under a shallow sea, a subtropical forest similar to the Everglades of Florida today, and similar to an African savannah. The fossilized animals give clues to these long gone environments here in western South Dakota. The wealth of fossils found here is the main reason Badlands was set aside as a national park. During the late 1800s, a rush of fossil hunters explored the buttes and canyons, removing tons of specimens to museums on the East Coast. The stories preserved in stone are incredibly important to science. Just as missing puzzle pieces ruin the picture, missing information makes it difficult to decipher Badlands history. Remember to leave fossils where you find them and report your finds to a park ranger or paleontologist. Scientists of the present and visitors of the future will thank you.

Research These Resources

NPS Nature and Science: www.nature.nps.gov
Invasive Species Information: www.invasivespeciesinfo.gov
Fossils: www.northern.edu/natsource/earth/Fossil1.htm
Black-footed Ferrets: www.blackfootedferret.org/
Intertribal Bison Cooperative: www.intertribalbison.org
Mixed Grass Prairie: www.nps.gov/badl/exp/prairie.htm

Partners and Plans - What's Happening at Badlands

A Little Help From Our Friends

With the help of Ted Hustead, founder of Wall Drug Store, Badlands Natural History Association (BNHA) was established in 1959. This non-profit organization is dedicated to advancing education and research in Badlands National Park. To this end, BNHA runs the park's bookstore located in the Visitor Center, selling materials related to park resources and critical issues such as prairie, human history, geology, and paleontology. BNHA also sponsors and publishes pamphlets and books related to the Badlands. All proceeds from these sales go to support education and conservation, such as printing the park's newspapers, funding the park's internship and education outreach activities, supporting the park's research library, continuation of the Artist in Residence Program, and other projects. Since its initation, BNHA has donated over \$1.0 million to the park, improving park programs and the quality of our visitors' vacations.

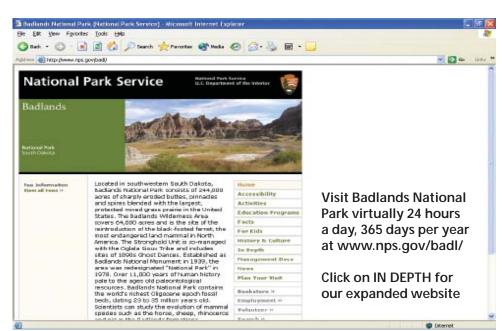
A Fresh Look For the Ben Reifel Visitor Center

During 2005, visitors were surprised to find the park's main visitor center, the Ben Reifel Visitor Center, was closed. Through funding provided by Congress combined with support from the Fee Demonstration Program and Badlands Natural History Association, the fifty year old building has received a facelift. Designed in the 1950s when park visitation was less than 200,000 per year, the small structure quickly proved inadequate to the numbers of people needing information, orientation, and other visitor services. The exhibits were out of date and worn. The need for an indoor theater was apparent due to extreme temperatures reached in the outdoor "porch" where an orientation movie was shown. The structure lacked accessibility for those with mobility impairments and developed cracks in the foundation, walls, and ceiling as the underlying soils shifted. A temporary building was put into place and the park's Resource Education staff packed up and crammed themselves into every available space for the year-long renovation of the Ben Reifel Visitor Center.

New exhibits including interactives, models, murals, and artifacts feature subjects like *Reading the Landscape, Why No Dinosaurs?*, and *Prairie Perspectives*. Audiovisual presentations give voice to park neighbors and their connections to the Badlands. A 100-seat theater with surround-sound premieres a new park film, *Land of Stone and Light*. BNHA moves into a new, enlarged bookstore to expand their fund raising capabilities while the NPS staff has a new information desk, classroom with TelNet broadcasting capabilities, an enlarged research library, and improved administrative space.



This exhibit shows the "Big Pig" (Archaeotherium) feeding on a hornless rhinoceros (Subhyracodon) as it is mired in the muck of a drying watering hole. To the right, a small, three-toed horse (Mesohippus) runs toward you as the rest of its herd is chased by a hungry saber-toothed cat (Hoplophoneus). This scene is an artist's representation of what scientists theorize the Badlands may have looked like over 26 million years ago.



A virtual tour of the Ben Reifel Visitor Center exhibits will be available online at the park's website in 2006. Check our website at least once a week for new postings, news, and job opportunities!

Oglala Sioux Parks and Recreation Authority

Just as the National Park Service is responsible for the inspiration, protection, and recreation on public lands in the U.S., the Oglala Sioux Parks and Recreation Authority (OSPRA) is tasked with similar duties on Pine Ridge Indian Reservation. A nation within a nation, the Oglala Lakota Nation of Pine Ridge welcomes thousands of explorers each year - seeking immersion into the culture and landscapes associated with the Plains people. Since 2004, OSPRA has operated the White River Visitor Center, located on the South Unit of Badlands National Park, as a means of educating the public on Lakota history and culture. In 2006, a new structure will be in place with new exhibits and the potential for expanded activities for both Reservation residents and visitors to the Oglala Lakota Nation. The Oglala Sioux Tribal Council charges OSPRA with the management of fishery, wildlife, and outdoor recreational activities on Pine Ridge.



Enos Poor Bear, Jr. orients visitors to his home, Pine Ridge Reservation.

The Pig Diggers: Teaching the Scientists of Tomorrow

In 1993, visitors to Badlands found a backbone protruding from the soil near the Conata Picnic Area. They did the right thing: They left the fossil in place, took pictures, and reported their find to staff at the information desk. Paleontologists investigated the bones and began excavating. Well, they are still digging - over a decade later - unearthing over 13,000 fossilized bones of extinct animals. The site, nicknamed the Big Pig Dig because of the proliferation of ancient pig-like mammal bones, is open to the public every summer so visitors can watch paleontology in action.

The Pig Dig's story starts 32 million years ago when a shallow, mucky watering hole served as a natural trap for animals needing a drink. These animals - hornless rhinoceroses, tiny three-toed horses, and cow-sized pigs - became mired in the mud and died, sinking to the bottom of the pond. Quickly covered by more sediments, these animals fossilized and remained undisturbed for millions of years in a rich fossil bed. Today, students from the South Dakota School of Mines and Technology (SDSMT) in Rapid City, South Dakota, meticulously work to bring these creatures to light. Using dental picks, paint brushes, and trowels, the "Pig Diggers" turn up paleontological treasures for research and display.

As a federal repository, SDSMT also prepares, casts, and stores fossils from Badlands, as well as dozens of other sites all over the world. The Museum of Geology on the SDSMT campus displays many of these specimens and is open to the public year round. Actually, SDSMT's history in the Badlands pre-dates the National Park Service. Field camps from SDSMT have studied the Badlands formations and fossils since 1899.



Research These Resouces:

Badlands Natural History Association: www.nps.gov/badl/exp/bnha.htm

South Dakota School of Mines and Technology: www.sdsmt.edu
The Big Pig Dig: www.nps.gov/badl/brochures/pigdig.pdf
The Stronghold District of Badlands National Park: www.nps.gov/badl/brochures/stronghold.pdf

Oglala Sioux Parks and Recreation Authority: www.lakotamall.com/oglalasiouxtribe

Working In Your National Parks

Careers: Have You Ever Considered . . .

Have you ever thought of being a park ranger? If so, the National Park Service is the logical place to look for a job. BUT - maybe you like to work on cars and trucks? National parks have fleets of vehicles to be maintained. Badlands National Park has one full-time and one part-time mechanic to keep the rangers on the roads. Interested in science? The NPS employs people with education in every science you can think of - from anthropology to zoology. How about accounting or other aspects of business management? Well, administration or concessions management may be the place for you. The lodges, gift shops, and other businesses operating in national parks are typically operated by concessioners - organizations contracted to provide visitor services that the NPS cannot provide. The park administrative staff ranges from accountants to clerks, all working toward balancing the budget, getting people hired, and getting supplies and materials purchased. A computer geek? There is an entire employment "series" dedicated to you - information technology. Large parks have their own IT specialists while smaller parks may "share" the salary and services of a travelling IT person. Most of these people may not be seen much by the public but are essential to the park and agency mission.

Back to that park ranger gig - Want to be a teacher but can't see yourself in a classroom full time? Well, interpretive park rangers, guides, and education specialists all provide walks, talks, school programs, and other visitor services throughout parks and their surrounding communities. Love law enforcement but patrolling interstates and city streets not for you? Protection rangers provide visitor assistance, search and rescue, and - yes - write citations but in a park setting,

This country is BIG - and national parks are stretched all the way across, as well as into the Virgin Islands, American Samoa, and other oceanic islands. Alaska has vast national parks larger than some states! Hawaii includes volcanoes and leper colonies. And South Dakota - well, we have one of the best selections of national parks around:

- •Badlands National Park, South Dakota's largest
- •Wind Cave National Park, South Dakota's oldest
- •Mount Rushmore National Memorial, South Dakota's most visited
- Jewel Cave National Monument, the most underground resources
- •Minuteman Missile National Historic Site, South Dakota's newest

Most park employees began their careers as volunteers (unpaid park staff) or seasonals (staff who work just peak visitation season, like summer, or on special projects funded for just a year). Each person applies directly to the park(s) they want to work in and keeps their fingers crossed that they will get a phone call, offering them a job. Keep in mind that competition is intense - at many well known parks like Grand Canyon, they may receive 2000 applications for just ten open jobs! An advantage of these temporary types of jobs is that you can "sample" the entire NPS and the entire country and get to actually LIVE in a national park - places that most people just get to visit for a day or two. You see sunrise over world-famous features every day or see wildlife through the season or really get to know park neighbors because they are your neighbors, too!



Park Ranger Charles Beall assists park neighbor Charity Kuhl in discussion on paleontological resource management at Badlands National Park.

Just for Students (When You're 18 or Older)

If you've ever thought about working for the National Park Service but weren't sure how to start, maybe you should think about beginning as a student. Through the Student Educational Employment Program, the NPS provides a special opportunity for students to get career experience. There are two tracks under this program. The Student Temporary Employment Program (STEP) gives students from the high school level up through graduate studies the chance to work for the NPS for a summer or a semester. To be considered as a STEP applicant, students must be enrolled at least half-time and must be at least 18 years of age. Their course of study in school does not have to relate directly to their work area in the NPS.

For those seeking a permanent career with the NPS, the Student Career Experience Program (SCEP) puts them on track for permanent status. Their work experience is directly related to academics, meaning biology majors are placed in biologically-based jobs and so forth. After completing all work and school requirements, SCEP students may be placed in a permanent position without competition.

For More Information:

Employment in the NPS: www.nps.gov/personnel/
Employment with the Federal Government: www.usajobs.opm.gov
Student Educational Employment Program: www.opm/gov/employ/

Volunteers-in-Parks: www.nps.gov/volunteer/

Volunteering at Badlands National Park

Call **(605) 433-5244** for the park's volunteer program coordinator. You may volunteer at any age - but you'll need written permission from parents or a guardian if you are under 18 years old.

Volunteering

The best way to get started in the National Park Service is to volunteer - contribute your time and talents as you can and be willing to learn new things without getting a pay check. The Volunteers-in-Parks program (VIP) helps the NPS provide the services visitors have come to expect. Volunteers also assist behind the scenes in every type of work paid staff performs. In turn, volunteers are given the opportunity to work - and sometimes to live! - in the nation's most beautiful and historic settings. In 2004, 140,000 volunteers donated over 5 MILLION hours of services to the NPS. This translates to a donation of time valued at \$85.9 MILLION DOLLARS. Enacted in 1970, the VIP program is critical to many parks' visitor service programs. You can make a dream reality by searching for volunteer positions in your favorite national park at www.nps.gov/volunteer/ Remember to click on OPPORTUNITIES. You may find the perfect position for you at a park you didn't even know existed. Depending on a park's needs, you may be able to track wildlife, work with children, maintain trails, conduct surveys, take photographs, catalogue specimens, or just chat with visitors on trails and around historic buildings.

At Badlands National Park, volunteers are vital. Each summer, unpaid staff provide up to 50% of the park's education contacts by giving Junior Ranger Programs, staffing the information desk, providing onsite education at the Big Pig Dig, or leading visitors on Prairie Walks. During the fall, spring, and winter months, volunteers staff the information desk and provide support for collections management, office work, present school programs, or assist in other aspects of off-season operations. At Badlands, full-time volunteers are unpaid but receive park housing at no cost, reimbursement for necessary uniform items, field trips to other national parks, and extensive training in their duties. Student volunteer interns receive reimbursement for their out-of-pocket expenses in cases of financial need. Corree Seward, a 2005 volunteer intern from Unity College in Maine, shared her experience:

Q: How did you find out about the Volunteers-in-Parks Program?

A: It was my last month of college and I was researching positions in interpretation and found a listing for the Badlands internship on the job board of the North American Association for Environmental Education.

Q: What did you study in college?

A: Environmental writing. That's not really what visitors usually expect to hear. They expect parks [and recreation] or biology, but I've worked on several writing projects while I've been here like a newspaper for elementary school kids.

Q: Why did you choose Badlands?

A: I really liked the idea of working in such an extreme landscape with the mix of prairie, geology, and history. It's not a place everyone gets a chance to know. I also want to be a permanent interpretive ranger with the Park Service and this has been a really good job experience.

Q: What have been the benefits of being a volunteer?

A: I've learned a lot... We had a really comprehensive training at the beginning of the season on park resources, the National Park Service, and how to put together interpretive programs... I work with the public every day. And I live in this beautiful setting and can go hiking anytime I want - my backyard is a national park. Oh, and also I got hired as a seasonal park guide at Badlands in August so volunteering really did lead to a job with the National Park Service.

Q: What have been your most rewarding experiences this summer?

A: Well, any time a visitor tells you you did a good job at the end of a program or the whole audience claps, it feels pretty good. And, you know, you sort of become a part of people's vacations. They might remember something you said, and it might inspire them to learn more or care more about nature or history. Ilove swearing in Junior Rangers, too. It's great to have them all lined up at the end of a program to hand out the badges and see how excited they are.

Q: What will be your favorite memory of the Badlands?

A: Probably being out at Sage Creek Wilderness under a full moon with bison grunting all around me in the background.

Can't afford to volunteer full-time? Find a national, state, county, or city park - or nature center - in your hometown. Bet they could use your help a few hours or a few days per week. Pitch in. Immerse yourself. You just may find your life's love.



Corree Seward, Volunteer, with a Badlands bison



Corree Seward, Park Guide, giving a Fossil Talk

Your Role in the Future

I can see forever . . . It is an environment where nothing comes between me, the sky, the horizons, and my dreams. - Ed Butterfield, Grasslands Institute

Your Turn

What can you do to be involved in your parks?

Explore

First of all, visit! The best way to show support for national parks is by experiencing them. There are National Park Service units in every state - well, except Delaware. Get out a map, find the nearest national park or national historic ite or national battlefield or national seashore (you get the idea) and ask your parents to take there. Go to the visitor center and check out exhibits, movie, and bookstore. Learn more about the plant and animals that live there and how they work together. Find out about the critical issues the park faces - Is it threatened by invasive species? Are biologists trying to protect an endangered species? Is the park threatened by air pollution? How do visitors impact the resources? Look up the story of how the park came to be. Talk to a ranger and ask them about their work. See how many questions you have to ask before you stump them. Take a hike. Look for wildlife. Watch the sunset. Image the past in the place.

If you can't physically visit a park, travel the country online at www.nps.gov Pick out a park to visit in the future. Parks present endless possibilities and, as you get to know them better, you'll have a better idea what challenges they face and how to help.

Get Active

The Badlands is a beautiful place that has been well taken care of; however, don't forget that basic American concept of We The People. Parks need you - consistently and actively. Badlands still faces dozens of challenges. On pages 4 through 6, we've described park activities underway and ongoing. On a larger scale, the park has to consider the effects of airborne pollutants and global climate change caused by humans. You can help all parks by learning, volunteering, and teaching others about parks. Maybe in a few years we'll even see you working for the National Park Service - for a summer or for a career.

With our care, Badlands National Park - and all the other national parks - will continue to be points for inspiration. Your help means the Badlands will remain a special place of light and solitude where visitors can watch prairie grasses run in front of an approaching storm, mule deer scramble up the side of the butte, and bison shamble through a prairie dog town. It is a place for you.

What's the Best Idea YOU Ever Had?

Remember back on page 2 where I said that "national parks are the best idea we ever had"? Well, maybe you could be the idea behind the NEXT national park. Consider the story of Brian Mortenson, a high school kid in Wall, South Dakota. Since he was little, Brian loved uniforms and airplanes and such. He knew that the missile silos from the Cold War that dotted the Great Plains were being torn apart after the fall of the Berlin Wall. He told his dad that he thought one should be set aside as a national historic site because of the important role they played in world history. His father, who happened to be the superintendent of Badlands National Park, got the ball rolling and in 1999, Minuteman Missile National Historic Site was signed into existence by President William Clinton. Thanks, Brian! Now - what's YOUR best idea? Make it a reality.

About the Author

The White River Wire was written by Rebekah Ann Beall, a native of Indiana and a graduate of Albion College in Michigan. Bekah volunteered as a park naturalist during the summer of 2005, giving Prairie Walks, Fossil Talks, Junior Ranger Programs, Prairie Dog Talks, and other activities to park visitors.

Bekah majored in writing and has been a park supporter - local, state, and

national - since her childhood. Hey, Bekah - there aren't any national parks in Indiana! Sure there are - Indiana Dunes National Lakeshore, Lincoln Boyhood National Memorial, and George Rogers Clark National Historical Park. Three in

Indiana alone.

Bekah administers the Junior Ranger Pledge to the newest members of the Badlands ranger corps.



Leave No Trace

When visitors act responsibly, parks remain "unimpaired" - this is part of the NPS mission. They don't leave as many human fingerprints or foot prints. Parks stay beautiful and healthy for the future. When you explore parks, leave no trace by thinking about the follow principles:

Plan Ahead and Prepare

What will the weather be like? What should you take along? Don't forget a hat, boots, long pants, sunscreen, and lots of water if you visit the Badlands. At historic sites, what can you do and what is open to the public?

Travel and Camp on Durable Surfaces

Stay on trail and roads to reduce impact on plants and wildlife and to prevent erosion. In historic sites, don't climb on walls or furniture and stay in visitor-designated areas.

Dispose of Waste Properly

Recycle and place non-recyclable items in trash cans. If trash cans aren't available, take your trash with you. Don't litter - ever.

Leave What You Find

Everything in national parks is protected. That includes the tiniest pebble and the smallest chip of fossil. These resources belong to the entire American public and should remain where they are found.

Find out if campfires are allowed. For instance, they aren't permitted in the Badlands due to extreme danger of prairie fire. Know where you can have them or what your alternatives to fire are.

Respect Wildlife

When you come in contact with wildlife, let it be wild. For you own safety and theirs, don't approach animals. Observe them from at least 100 meters and, no matter how hungry they may look, do not ever feed wildlife. Animals quickly become dependent on human food and can become aggressive, as well as develop poor health. In dry climates like Badlands, wildlife can quickly dehydrate due to the high levels of salt in human foods.

Be Considerate of Other Visitors

Remember there are other visitors in the park. Let them enjoy their experience by keeping pets on leashes, your voice lowered, and following these principles.

Celebrate Your Diversity

National parks are not just about nature. While they are places of our past, they are savings for the future. They tell the stories of who we are as a nation - what we should never forget. What is your personal story, your heritage? African-American history is richly remembered at sites across the country but did you know that black heritage is important to Rocky Mountain National Park in stories of the buffalo soldiers or that there were black cowboys? Badlands National Park is a tribute to geology but also a sacred site for at least a dozen American Indian cultures. Swedish-American history is recaptured at the Bailly-Chelberg Farmsite in Indiana Dunes National Lakeshore just outside of Chicago, Illinois. Chinese laborers were critical to the story of Golden Spike National Historic Site in Utah. And on and on.

National Park Service interpretive rangers are encouraged to "tell the untold stories." One of those stories is yours. Find your voice and your place in the national parks of this nation and tell it to the world. We're waiting for you.

For More Information:

Visit Badlands National Park virtually: www.nps.gov/badl/exp/home.htm Learn about volunteering in national parks: www.nps.gov/volunteer Become a Leave No Trace master: www.Int.org Take the Ecological Footprint Quiz: www.earthday.net/footprint/

Need to Talk With a Ranger?

Email Chief of Resource Education Marianne Mills at marianne_mills@nps.gov anytime with questions about Badlands National Park or careers with the National Park Service. She started out as a volunteer in her Illinois hometown historical society, volunteered at Grand Canyon, and has now worked at 15 units of the National Park System ranging from Alaska to the U.S. Virgin Islands and helped out in a national park in the nation of Hungary!

Want more information about Badlands National Park sent to you?

badl_information@nps.gov Email

Badlands National Park; P.O. Box 6; Interior, South Dakota 57750

Phone (605) 433-5361